Eye on the Sky

Winter 2001/2002, Volume 2, Issue 4
Louisville, Kentucky

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A Newsletter for Emergency Managers, Core Storm Spotters, Media, and Public Officials in our County Warning Area

KET and the National Weather Service Working Together to Improve Services

by Mike Matthews, Meteorologist-in-Charge

On November 15, 2001, KET (Kentucky Educational Television) demonstrated their existing and future digital broadcast capabilities at the National Weather Service (NWS) office in Louisville. KET showed how they could provide real-time, reliable life-saving weather and emergency information to homes, businesses, and emergency officials using their broadcast. "The benefit to the public is expanded information access. KET detailed how they could exponentially increase public accessibility to this information while cutting customer costs. That's a win-win situation."

KET is taking a leadership role in digital broadcasting and pioneering new opportunities to help all Kentuckians. KET explained how their existing statewide network will deliver real-time digital data across the Commonwealth of Kentucky in early 2002. This capability would be well ahead of the nationally mandated 2003 deadline and likely would be used as an example of success.

In their presentation, KET used the NWS Emergency Manager Weather Information Network (EMWIN) satellite broadcast to receive and retransmit live NWS weather information over their digital network for public access. Signals from KET's expansive tower network reach all Kentucky counties and parts of several other states.

Currently, the set-up cost for a full EMWIN system is about $1500. KET is committed to providing this information through their broadcast network free of charge. The only equipment a computer user would need is a decoding card (DTV tuner card) that can be plugged into a computer externally, and a regular house mounted television antenna. The card is expected to be priced around $200, resulting in a significant savings to receive EMWIN weather information. Once connected, there are no recurring fees.

The digital broadcast would be receivable independent of the Internet. Additionally, this technology would ensure that local and state emergency management officials receive critical emergency information in a depth and timeliness currently unavailable with the existing analog broadcast system.

KET also demonstrated other digital opportunities and applications that could profoundly increase safety for all citizens. These new technologies combined with KET's delivery capabilities could provide support for homeland security efforts. According to KET's Executive Director Virginia Fox, "KET's proactive leadership role and vision is blazing a path and setting a standard for other states to follow in the years ahead."

Information on the EMWIN system can be found at: *http://iwin.nws.noaa.gov/emwin/index.htm.*

Information on KET can be found at *http://www.ket.org*.

Inside this Issue...

Winter Wonders

by Tony Sturey, Senior Forecaster

As we rapidly approach the upcoming winter season, now is the time for everyone to reacquaint themselves with winter weather terminology. For county executives, emergency managers, and others, it especially is important to fully understand the message we are trying to convey. The following is a brief review of the winter weather products issued by the National Weather Service in Louisville.

Winter Storm Watch: A winter storm watch is issued for the potential occurrence of heavy snow, blizzards, or significant accumulations of freezing rain or sleet. A winter storm watch usually will be issued 24 to 36 hours in advance of an event, as soon as the meteorologist has reasonable confidence that the event will occur. A winter storm watch normally is not issued 48 hours or longer in advance of an event, unless there is strong confidence in the forecast.

Winter Storm Warning: A winter storm warning is issued 12 to 24 hours in advance of an event to inform the public of the high probability of occurrence of severe winter weather. A winter storm warning is issued for heavy snow, or significant accumulations of freezing rain or sleet. The forecasters have the option of issuing a “Heavy Snow” or “Ice Storm” warning if that is the sole weather factor driving the warning process.

For blizzard conditions, a Blizzard Warning would be issued. Blizzard conditions are roughly defined by sustained wind speeds or frequent gusts of 35 mph or greater, and considerable falling and/or blowing snow which frequently reduces visibility to less than 1/4 mile. These conditions must persist for three hours or more. Blizzard conditions are rare in our area.

Eye on the Sky is a quarterly newsletter published by the National Weather Service in Louisville, Kentucky. Comments and suggestions are always welcome. Your feedback is very important to us!

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http://www.crh.noaa.gov/lmk/newsletter/

Chief Editors: Ted Funk and Van DeWald

Heavy Snow Criteria for issuing a Winter Storm Watch/Warning:

4 inches or more in 12 hours, or 6 inches or more in 24 hours

Freezing Rain Criteria for issuing a Winter Storm Watch/Warning:

Ice accumulation of 0.25 inches or greater

Winter Weather Advisories: These are issued when hazardous winter weather may cause inconvenience or difficulty to travelers, or for people who must be outdoors. Advisories normally are issued only for the first 12 hours of the forecast, but can extend out to 24 hours if necessary.

The most common type of winter advisory is a Snow Advisory, which would be issued for average snowfall totals from 1 to 4 inches. Other advisories include a Freezing Rain or Freezing Drizzle Advisory for average ice accumulations less than 1/4 inch, and a generic Winter Weather Advisory would be issued for a combination of phenomena.

The key to surviving winter storms is to plan ahead.

Check battery powered equipment before the storm arrives. A portable radio or television set may be your only contact with the world outside.
Check your food stock and extra supplies. Your supply should include food that requires no cooking or refrigeration in case of power failure.
Stay indoors during storms unless you are in peak physical condition. If you must go out, avoid overexertion.
Do not kill yourself shoveling snow. It is extremely hard work for anyone in less than prime physical condition, and can bring on a heart attack, a major cause of death during and after winter storms.
If the storm exceeds or even tests your limitation, seek available refuge immediately.
If traveling, plan your travel carefully and select primary and alternate routes. Check the latest weather information on your radio. Inform others of your expected arrival time.
Try not to travel alone; two or three persons are preferable.
Always fill your gasoline tank before entering open country, even for a short distance.

Wind Chill Advisory: Issued when wind chill temperatures are expected to be between -10 F and -24 F inclusive with wind speeds around 10 mph or higher.

Wind Chill Warning: Issued when wind chill temperatures are expected to be at or below -25 F with wind speeds around 10 mph or higher.

Temperature (ºF)

Wind (mph) / Calm	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
5	36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
10	34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
15	32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
20	30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
25	29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
30	28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
35	28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
40	27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
45	26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
50	26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95
55	25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97
60	25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98

Frostbite Times 30 minutes 10 minutes 5 minutes

As discussed in our previous newsletter, a new Wind Chill Temperature index was implemented on November 1, 2001. Whereas the existing index had been in use for over half of a century, the new index uses a more understandable and useful formula that more accurately documents the combined effects of air temperature and wind speed.

Above, you'll find the new Wind Chill Temperature Index chart. To use, simply find the actual air temperature in the row column, and then scan downward until you reach the designated wind speed. For example, if it were 5 F with a wind speed of 15 mph, the Wind Chill Index would be -13 F.

Cooperative Observer Watch

by Larry Dattilo, Data Acquisition Program Manager

In October, Berea College, located in Berea, Kentucky, was presented an award by the National Weather Service for 100 years of service as a volunteer weather observation site. This was the first 100 year award ever presented in the Commonwealth of Kentucky. Meteorologist-in-Charge Mike Matthews presented the award to Dr. Smith Powell, Physics Department Head; Dr. Amer Lahamer, Chair of the Physics Department; and Jacqueline Price, the primary cooperative student observer at Berea College. The station has been operating continuously since January 1901. The station records maximum and minimum temperatures, 24 hour rainfall, high and low relative humidity, and soil temperatures.

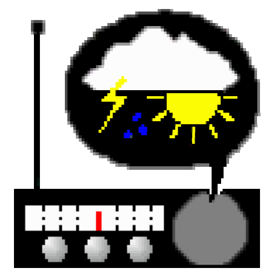
The following is a list of some of the individuals honored for their years of dedicated service to the National Weather Service and to the states of Kentucky and Indiana. All of these received length of service awards throughout 2001:

Floyd Gray, Scottsburg, IN, 55 years
Faye Kennedy, Boston, KY, 35 years
Mrs. Jewell Sears, English, IN, 30 years
Dubois Forage Farm, IN, 30 years
George Edelen Jr., Bradfordsville, KY, 25 years
David Dadisman, Mt. Eden, KY, 20 years
Kenneth Kane, Beaver Dam, KY, 15 years
Sam Speer, Rochester, KY, 15 years
Howard Hyde, Franklin, KY, 10 years
Homer Strong, Crab Orchard, KY, 10 years
James Willis, Fordsville, KY, 10 years

If anyone knows of an individual or institution that would like to participate in the Cooperative Observer program, please contact Larry Dattilo at this office.

NOAA Weather Radio Update

by Chris Smallcomb, Forecaster



NOAA Weather Radio, the National Weather Service's primary means of directly communicating weather warnings to the public, has undergone a few changes in the past month. Not only are three new transmitters online, but the way we broadcast products has become more automated.

As was mentioned in the previous newsletter, the NWR coverage in central Kentucky and south-central Indiana has improved significantly with the addition of three new transmitters. On a frequency of 162.450 MHz, a transmitter in Ekron (Meade County) will rebroadcast information from the Louisville transmitter. On a frequency of 162.475 MHz, a transmitter near Burkesville (Cumberland County) will rebroadcast information from the Bowling Green transmitter. And finally, on 162.525 MHz, a transmitter in Campbellsville (Taylor County) will contain original programming. More information about these new transmitters can be obtained on our Website.

Additionally, by implementing a new software package called *Café*, nearly all products will be broadcast automatically, including river and climate information, and severe weather watches and warnings. The process takes less than five seconds with the new program, i.e., the products are broadcast immediately upon transmission rather than waiting for human intervention. By using the automation afforded by *Café*, a significant amount of time will be saved, which is extremely important when seconds can save lives.

Whether or not you like the computerized voice, you should know that you are receiving the latest weather information immediately after it has been issued by our office. This is why NOAA Weather Radio is and will continue to be the best method for obtaining severe weather warnings directly from the National Weather Service.

Finally, the current computerized voice will be upgraded to a more realistic, human-sounding voice early in 2002. More details on this will be provided in the next newsletter.

Recent Noteworthy Astronomical Phenomena

by Russ Conger, Senior Forecaster

National Weather Service staff members are not experts in astronomy. However, several events have occurred recently that you may or may not be aware of.

A full moon was visible on Halloween, October 31, 2001. Another full moon on Halloween will not occur until the year 2020.

Secondly, there was a recent exquisite display of the Aurora Borealis known also as the Northern Lights. Technically, they resulted from what astronomical scientists call a coronal mass ejection that moved rapidly away from the sun on November 4, 2001 and swept our planet during the wee hours of November 5. It triggered a severe geomagnetic storm and widespread auroras that reached as far south as Florida, Texas, and California.

Later in November, the Leonid meteor shower occurred, perhaps the biggest in decades. It peaked early Sunday morning, November 18th.

What is in store for the month of December? Some events are predictable and others will be difficult to predict. If Internet access is available, you may obtain the latest solar-geophysical forecast, issued as a joint effort by the United States Air Force and NOAA at *http://www.sec.noaa.gov/forecast.html*.

Astronomical Calendar

Louisville	Sunrise	Sunset
December 1	741 am est	523 pm est
January 1	800 am est	534 pm est
February 1	748 am est	606 pm est
March 1	715 am est	636 pm est

Lexington	Sunrise	Sunset
December 1	735 am est	519 pm est
January 1	754 am est	529 pm est
February 1	742 am est	601 pm est
March 1	709 am est	632 pm est

Bowling Green	Sunrise	Sunset
December 1	641 am cst	429 pm cst
January 1	659 am cst	440 pm cst
February 1	648 am cst	511 pm cst
March 1	617 am cst	540 pm cst

Moon Phases

New Moon	**First Qtr**	**Full Moon**	**Last Qtr**
Dec 14	Dec 22	Dec 30	Jan 6
Jan 13	Jan 21	Jan 28	Feb 4
Feb 12	Feb 20	Feb 27	Mar 6
Mar 14	Mar 22	Mar 28	Apr 4

Winter Solstice (Start of Winter)

December 21 at 2:22 pm est (1:22 pm cst)

We at the National Weather Service would like to extend to you and your family a joyous holiday season!

In This Issue:

Severe Thunderstorms Hit Area on October 24

Jet Streaks: Their Importance in Vertical Motion and Precipitation Production

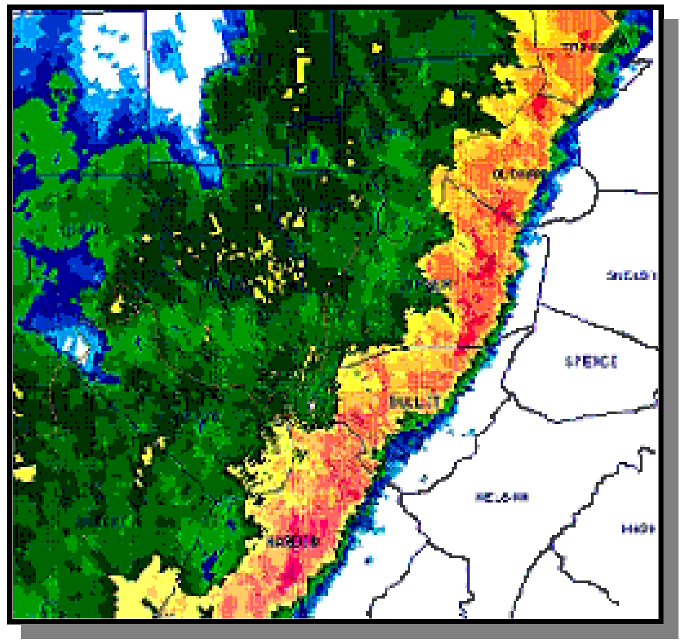
By Ted Funk, Science Officer

The Science Corner

October 24: A High Risk of Severe Thunderstorms Produces Widespread Wind Damage

On October 24, 2001, most of central Kentucky and south-central Indiana was placed in a "high risk" of severe thunderstorms by the Storm Prediction Center (SPC) in Norman, Oklahoma. It is the responsibility of SPC forecasters to analyze environmental conditions, then issue severe weather outlooks for the United States according to a 3-tiered risk level format, including "slight," "moderate," and "high." A slight risk is the most common severe outlook, which is issued when severe storms may produce scattered reports of wind damage and large hail, and isolated tornadoes. A moderate risk denotes a potentially more volatile atmosphere with widespread wind damage, large hail, and a few strong tornadoes possible. A high risk is the least common outlook, reserved for an environment exhibiting very strong vertical wind shear, instability, and lift which will result in numerous supercell and squall line thunderstorms, a possible outbreak of strong-to-violent tornadoes, widespread wind damage, and large hail. SPC outlooks are designed to alert the public and National Weather Service (NWS) forecasters of the potential for severe weather. However, they do not guarantee that severe weather will develop or evolve as expected. Once severe storms are imminent, SPC issues a severe thunderstorm watch, if wind damage and/or large hail are the primary threat, or a tornado watch, if tornadoes also are possible. Local NWS offices (including Louisville) produce follow-up statements to complement SPC's outlooks and watches, and issue all warnings when severe weather signatures are observed on radar or reported by public officials or spotters.

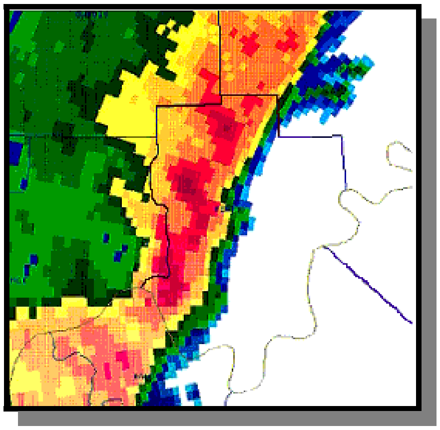
During the evening of October 24, an extensive severe squall line raced across the Ohio Valley ahead of a powerful cold front. The squall line produced widespread straight-line winds of 50 to 60 mph with some gusts between 60 and 80 mph across central Kentucky and south-central Indiana. This resulted in many downed trees and power lines and some structural damage. Damage was most significant along bowing line segments (bow echoes) embedded within the line. There also were a few supercell storms that developed just ahead of the line that produced large hail. These storms then merged quickly with the rapidly moving squall line. These mergers essentially prevented the supercells from remaining isolated ahead of the line long enough to produce tornadoes, as originally anticipated by the SPC. However, supercells were even more common across central and northern Indiana (which also was within SPC's high risk area), some of which produced damaging tornadoes in northern Indiana. The following images below show low-level reflectivity data from parts of the squall line as viewed from our WSR-88D Doppler radar, and an image of wind damage that occurred near Louisville. Additional images from this event can be found online at *http://www.crh.noaa.gov/lmk/soo/88dimg/102401_evt.htm*.



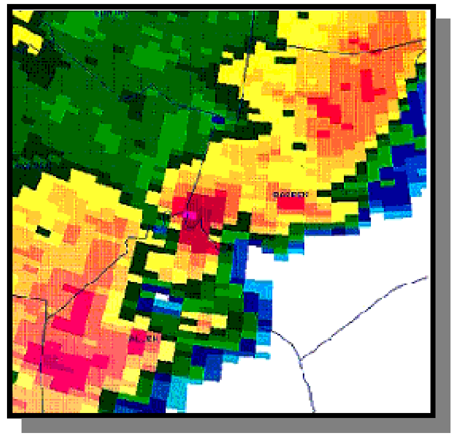
The squall line raced across north-central Kentucky with an intense leading line and lighter precipitation behind the line.

Near Louisville, severe straight-line winds caused a power pole to snap (far background of image). The weight of the snapped pole caused additional poles (foreground of image) to become bent as well.

A close-up of the



squall line over Perry County, Indiana showed a bow echo with a line echo wave pattern (LEWP; red colors), which can be associated with significant wind damage and even tornadoes.



Over south-central Kentucky, a supercell was embedded within the squall line in west-central Barren County. The storm produced wind damage and large hail (red and pink colors in center of image).

Jet Streaks: Their Importance in Vertical Motion and Precipitation Production

In the previous issue of *Eye on the Sky*, we discussed the importance of cold fronts aloft in the production and evolution of precipitation. In this issue, we examine the importance of jet streaks, which can play a significant role in everyday weather, especially in the winter and spring.

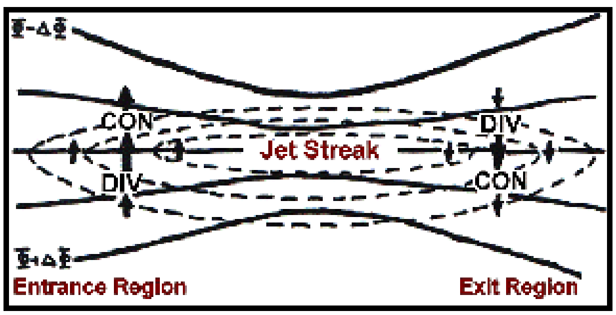


Figure 1: *Idealized example of the entrance and exit regions of a straight jet streak. Dashed lines are lines of equal wind speed (isotachs); solid lines are height lines along which the actual wind blows. Winds are strongest along the jet core in the center of the jet streak. A pattern of divergence (DIV) and convergence (CON), and subsequent vertical motion occurs within the exit and entrance regions.*

A "jet streak" refers to a portion of the overall jet stream where winds along the jet core are stronger than in other areas along the jet stream. Entrance and exit regions of jet streaks are very important in terms of vertical motion, surface pressure systems, and organized precipitation given sufficient low-level moisture. An exit region is where air parcels "exit" out of a jet streak and decelerate downstream from the jet core (Fig 1). An entrance region is where parcels "enter" into a jet streak and accelerate upstream from the jet core (Fig. 1). Within exit and entrance regions of jet streaks, upper-level divergence is created as air parcels moving at different speeds become out of balance with ambient temperatures. The atmosphere responds to this imbalance by producing vertical motion. In general, the faster the winds accelerate within an entrance region or decelerate in an exit region per unit distance along the flow, the greater the divergence, and the greater the vertical motion must be to restore atmospheric balance. Strong upward vertical motion combined with sufficient low-level moisture can lead to heavy rainfall or snowfall (depending on the atmospheric temperatures), while downward motion (descent) often is associated with dry, fair weather.

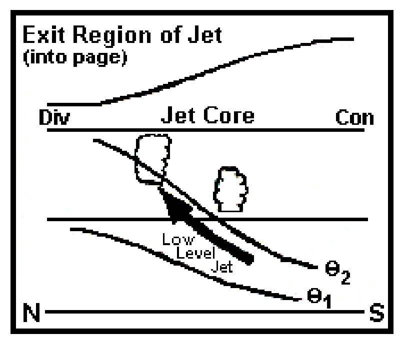


Figure 2: *Cross-section of a west-to-east jet streak exit region. The core of the jet is directed into the page so that the right (left) side of the image is the right (left) exit region. A more realistic sloped ascent of low-level moist air (bold arrow) roughly along isentropic surfaces (sloped thin solid lines) occurs toward the level of maximum upper-level divergence (DIV).*

For entrance regions, low-level warm air well south of the jet rises within the right entrance (right rear) region, while cold air aloft sinks in the left entrance region north or west of the jet. This air flow pattern tries to keep low-level cold air in place under and north of the entrance region, which can have implications on precipitation type within the rising, moist air. In fact, heavy snow in the Ohio Valley tends to be associated with a pronounced jet streak across the Great Lakes or middle Mississippi Valley, placing Kentucky and southern Indiana within the right entrance region aloft. For exit regions, the greatest ascent usually occurs on the cold (north or cyclonic) side of the jet core. Typically, vertical motion associated with jet streaks is sloped along isentropic surfaces (Fig. 2). Thus, vertical motion along isentropic surfaces will be stronger given the presence of significant jet streak circulations.

However, even without the presence of a jet streak, curvature in the flow, produced by upper-level troughs and ridges, results in patterns of divergence, convergence, and vertical motion (Fig. 3). The stronger the curvature (i.e., the more amplified the synoptic flow regime) and the shorter the wavelength between a trough and a downwind ridge axis aloft, the greater the upper-level divergence and ascent will be. Thus, in summary, upper-level divergence and responsive vertical motion are caused by 1) jet streak entrance and exit regions, and 2) curvature and wavelength of the overall flow (troughs and ridges). It is very important to consider both these phenomena in forecasting.

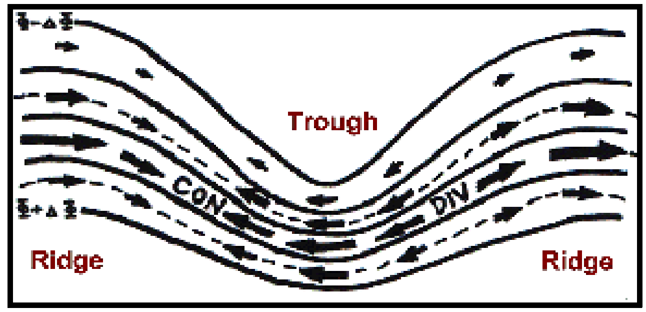


Figure 3: *Idealized example of an upper-level synoptic flow regime showing trough and ridge axes. Solid lines are constant height lines. Arrows are a component of the total wind that result in patterns of convergence (CON) and divergence (DIV), and subsequent vertical motion between the troughs and ridges.*

Superimposing a jet streak with curvature in the flow (i.e., a curved jet streak) causes enhanced patterns of divergence and vertical motion from that expected with a straight jet (i.e., no curvature; Fig. 4a). For a cyclonically-curved jet (Fig. 4b), maximum upper-level divergence values and subsequent ascent usually are found along and to the left of the core of the exit region, with descent along and to the left of the entrance region. For an anticyclonically-curved jet (Fig. 4c), divergence and ascent are strongest along and to the right of the entrance region, with descent along and to the right of the exit region. Ascent/descent values typically are greatest for cyclonically-curved jet streaks, second greatest for anticyclonically-curved jet streaks, and relatively weakest (but still significant) for straight jets assuming adequate wind variation along the jet streak core.

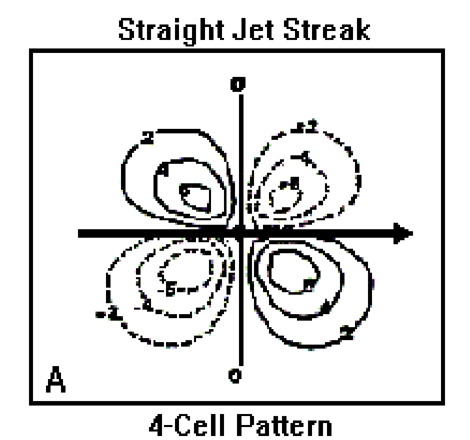


Figure 4a: *Straight jet streak (bold line). Upper-level divergence and upward motion occur in the left exit (dashed; upper right) and right entrance (lower left) jet regions. Convergence and downward motion usually prevail in the right exit (solid; lower right) and left entrance (upper left) regions of a straight jet streak.*

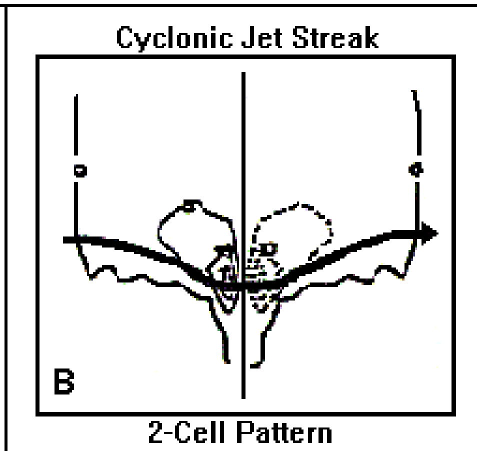


Figure 4b: *Cyclonically-curved jet streak (trough axis marked by vertical line). Divergence and ascent occur along and in the left exit region (dashed; right half of image), with convergence and descent along and north of the jet behind the trough axis (solid; left half of image).*

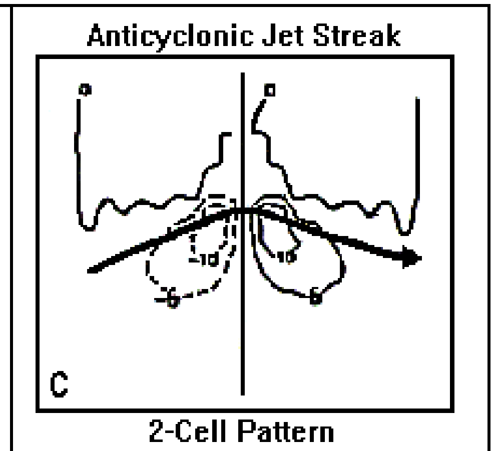


Figure 4c: *Anticyclonically-curved jet streak (ridge axis marked by vertical line). Divergence and ascent occur along and in the right entrance region (dashed; left half of image), with convergence and descent along and just south of the jet to the east of the ridge (solid; right half of image).*

Climate Wrap Up

by Mike Callahan, Service Hydrologist

The weather this fall was very pleasant and the unusually heavy rains in October wiped out the mild drought conditions that lingered on from summer. Regarding temperatures, September ran about 2 to 3 degrees below normal. Rainfall totals were only an inch shy of monthly normal.

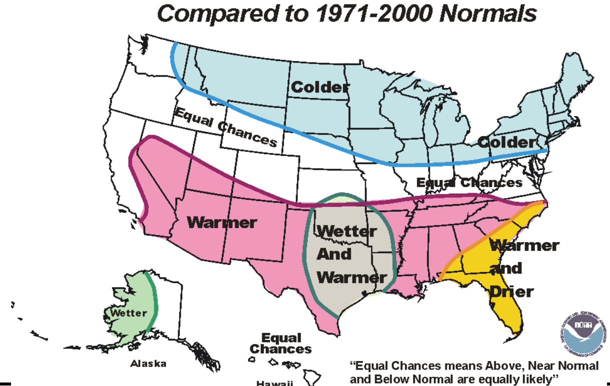
However, the drought came to a decisive end in October, especially in north-central Kentucky and south-central Indiana. Temperatures were near normal but rainfall ranged from an inch higher than normal across south-central and east-central Kentucky to more than 3 inches above normal across north-central Kentucky and south-central Indiana. This was the sixth wettest October on record in Louisville. A line of severe thunderstorms raked across the region on the 24th which knocked down numerous trees and power lines. Fortunately, no tornadoes were observed.

November was warmer than normal by about 5 to 6 degrees in Lexington and Louisville, but only 3 to 4 degrees above normal in Bowling Green. The first 3 weeks of November were very dry. However, due to heavy rains falling in the final week of the month, precipitation ended up above normal by 1.81 inches in Louisville and by one half inch at Bowling Green.

The winter outlook for our region calls for normal temperatures for most areas, but warmer than normal across south-central Kentucky, with normal precipitation. That means around 10 to 18 inches total snowfall, depending on where you live. In any case, normal winter precipitation should keep the drought away.

Normal High/Low Temperatures/Monthly Precipitation				
Location	**Dec 1**	**Jan 1**	**Feb 1**	**Mar 1**
Louisville	50/33/3.64	41/24/2.86	41/24/3.30	50/31/4.66
Lexington	49/32/3.98	40/24/2.86	40/22/3.21	49/30/4.40
Bowling Green	52/33/5.03	43/25/3.82	43/24/4.13	52/32/5.10

WINTER OUTLOOK 2001-2002
Temperature and Precipitation
Compared to 1971-2000 Normals



Climatological Notebook

Louisville	**Average Temp.**	**Departure**	**Precipitation**	**Departure**
September	66.8 F	-2.7 F	2.97"	-0.19"
October	57.3 F	-0.3 F	6.46"	+3.75"
November	52.0 F	+4.9 F	5.51"	+1.81"
Lexington	**Average Temp.**	**Departure**	**Precipitation**	**Departure**
September	66.1 F	-2.1 F	2.47"	-0.73"
October	56.7 F	0.0 F	3.71"	+1.14"
November	52.0 F	+6.1 F	3.30"	+0.06"
Bowling Green	**Average Temp.**	**Departure**	**Precipitation**	**Departure**
September	67.4 F	-2.3 F	2.08"	-1.64"
October	56.4 F	-1.4 F	4.04"	+1.02"
November	51.0 F	+3.5 F	4.93"	+0.50"

The Revised Digital Forecast

by Chad Swain, Forecaster, WFO Indianapolis

Beginning January 1, 2002, the Louisville NWS office will begin issuing a new forecast product, the Revised Digital Forecast, or RDF for short. The RDF will display forecasted weather parameters in 3-hour intervals. This information is combined in a matrix format, which creates a more detailed forecast and makes it easier for the user to obtain the weather parameter of choice.

In the modernized weather service, detailed digital forecast data soon will become available from NWS offices across the country. Prototype products containing this data already are available from some offices across the United States. The RDF will be available to disseminators of NWS products.

There are several forecasted parameters which appear in the RDF product. Some of these values are forecasted in 12-hour intervals while others are forecasted in 3-hour intervals. Listed below is a description of each of these parameters.

12 HOUR FORECASTS

POP 12HR: The probability of precipitation in a 12-hour period. This percentage probability is listed below the ending time of the 12-hour period. In the example, there is a 40 percent probability of precipitation in the third 12-hour period (ending at 18:00 or 6:00 pm est).

QPF 12HR: The average quantity of precipitation (in inches) expected across the forecast area during a 12-hour period. This amount is given in a range from lowest amount to highest amount.

MX/MN: The maximum (minimum) temperature forecast during the 12-hour period.

3 HOUR FORECASTS

TEMP: The expected temperature at the specified time period.

DEWPT: The expected dewpoint temperature at the specified time period.

RH: The relative humidity based on the expected temperature and dewpoint at the specified time period.

WIND DIR: The expected wind direction using the 8 points of the compass (e.g. W, NW, N, etc).

WIND SPD: The expected wind speed (in miles per hour).

CLOUDS: The expected cloud cover at the specified time period. The contractions used and their meanings are as follows: CL-Clear, SC-Mostly Clear to Partly Cloudy, B1-Partly to Mostly Cloudy, B2-Mostly Cloudy, OV-Overcast.

PRECIPITATION

The RDF lists several types of precipitation. The probability contractions and their meanings are as follows:

S Slight Chance (20%)
C Chance (30%-50%)
L Likely (60%-70%)
D Definite (80%-100%)
O Occasional (80%-100%)

The specified hour/day of the precipitation is found at the top of each column of the RDF. The types of precipitation as listed in the RDF are:

RAIN: Rain
RAIN SHWRS: Rain showers
TSTMS: Thunderstorms
DRIZZLE: Drizzle
SNOW: Snow
SNOW SHWRS: Snow showers
FLURRIES: Flurries
SLEET: Sleet (ice pellets)
FRZNG RAIN: Freezing rain
FRZNG DRZL: Freezing drizzle

Graphical forecasts based on the Revised Digital Forecast will be generated and posted to our Web page. The graphical presentation will include 3-hourly data through the first 60 hours of the forecast, and 12-hourly data beyond 60 hours through 7 days. Specific forecast pages will be available for each of the 59 counties within our county warning area.

Color-filled, areal graphics of maximum and minimum temperature, along with probability of precipitation also will be available that will cover all of south-central Indiana and central Kentucky as well.

Additional information about these experimental products will be provided in our next newsletter.

An example of the RDF product is displayed in the following Table:

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KYZ023>031-033-034-038-045-053-011945-
BRECKINRIDGE-BULLITT-GRAYSON-HANCOCK-HARDIN-HENRY-JEFFERSON-LARUE-
MEADE-NELSON-OHIO-OLDHAM-SHELBY-SPENCER-
INCLUDING THE CITIES OF...BARDSTOWN...ELIZABETHTOWN...HARDINSBURG...
LEITCHFIELD...LOUISVILLE...SHELBYVILLE
430 AM EST TUE JAN 01 2002

              TUE  01/01/02          WED  01/02/02          THU  01/03/02

EST      03 06 09 12 15 18 21 24 03 06 09 12 15 18 21 24 03 06 09 12 15 18

MX/MN                   37          31          39          24          28
TEMP     20 19 19 25 33 36 35 32 33 33 33 36 39 39 37 35 33 31
DEWPT    10 11 11 14 17 18 19 21 24 26 27 29 31 31 30 30 29 27
RH       65 71 71 62 51 48 52 63 69 75 78 75 73 73 76 82 85 85
WIND DIR  S  S  S  S  S SE SE SE SE SE SE  S SW NW NW NW NW NW
WIND SPD  2  2  5 10 10 20 20 20 10 10 10 10 10 10 15 15 15 15 10 10 10 10
CLOUDS   CL CL SC B1 B1 OV OV OV B2 OV OV OV OV OV B2 B2 B2 B2 B1 B1 B1 B1
POP 12HR                 0          10          40          20          10
QPF 12HR                 0           0     .01-.10           0           0
RAIN                                    C  C  C  C
SNOW                                    C  C  C  C

          \FRI 01/04/02\SAT 01/05/02\SUN 01/06/02\MON 01/07/02\
EST       21 03 09 15 21  03 09 15 21  03 09 15 21  03 09 15 21

MX/MN       20    35     25    40    20    45     25    45
CLOUDS      B2    B2     OV    OV    SC    SC     SC    SC
POP 12 HR   30    30     40    30    20    20     10    10
RAIN               C            C
SNOW         C     C      C

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Skywarn Recognition Day

by Van DeWald, Forecaster

On December 1, 2001, from 00 to 24 UTC, the National Weather Service and the Amateur Radio Relay League co-sponsored Skywarn Recognition Day. Ninety-six NWS stations across the country celebrated the contributions of amateur radio operators during severe weather. Each office hosted a special event in which Skywarn operators broadcasted via ham radio on all bands, in hopes of not only contacting as many NWS offices as possible, but also making as many Skywarn contacts in general. Last year, over 15,000 cumulative contacts were made by the participating stations.

This year, NWS Louisville made 351 contacts throughout the 24-hour period, which included 34 of the 96 participating NWS stations, 45 of the 50 United States, and several countries including Spain, Bulgaria, Scotland, Macedonia, Sweden, England, Poland, the Czech Republic, Canada, the Netherlands, and several locations in Russia.

Eight volunteer amateur radio operators participated in the event, either by helping set up equipment, staffing the amateur radios, or logging contacts. We appreciate all of the contributions made by Skywarn spotters, and thank each and every one for their valuable efforts. Skywarn spotters are an integral part of the warning process, and are the eyes and ears of the National Weather Service in the field. Despite all of the technology we possess, Skywarn spotters are and will continue to be our most valuable asset.